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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/007,299	11/08/2001	Giovanni B. Marchisio	480193.402	5356
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SEED INTELLECTUAL PROPERTY LAW GROUP PLLC			SKED, MATTHEW J	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/007,299	MARCHISIO ET AL.
	Examiner Matthew J. Sked	Art Unit 2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on ____.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 2-118 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) Claim(s) ____ is/are allowed.
- 6) Claim(s) 2-118 is/are rejected.
- 7) Claim(s) ____ is/are objected to.
- 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 03/26/02 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. ____.
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date ____.	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 81 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim recites the limitation "the normalized data structure contains....at least one of a set of meaningful terms that are verb modifiers of prepositional phrases that contain the governing verb". It is unclear how a prepositional phrase can contain a verb. For the purposes of examination it will be assumed this limitation should state, "the normalized data structure contains....at least one of a set of meaningful terms that are verb modifiers of verb phrases that contain the governing verb".

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States

only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 2, 13-24, 26, 27, 38-48, 50-54, 56-66, 68-80, 89, 93 and 94 are rejected under 35 U.S.C. 102(e) as being anticipated by Govrin et al. (U.S. Pat. Pub. 2003/0101182A1).

As per claims 2, 26, and 27, Govrin teaches a method, computer-readable medium and a syntactic query engine in a computer system for transforming a document of a data set into a canonical representation, the document having a plurality of sentences, each sentence having a plurality of terms, comprising:

for each sentence, parsing the sentence to generate a parse structure having a plurality of syntactic elements (ICA process analyzes sentence and parses them, paragraphs 37 and 56);

determining a set of meaningful terms of the sentence from the syntactic elements (noise words are ignored hence only analyzing the meaningful terms, paragraph 62);

determining from the structure of the parse structure and the syntactic elements a grammatical role for each meaningful term (determines the part of speech of each word, paragraph 38);

determining an additional grammatical role for at least one of the meaningful terms, such that the at least one meaningful term is associated with at least two different grammatical roles (determines the subject, object, predicate, etc. of each word, paragraph 40); and

storing in an enhanced data representation data structure a representation of each association between a meaningful term and its determined grammatical roles, in a manner that indicates a grammatical relationship between a plurality of the meaningful terms and such that at least one meaningful term is associated with a plurality of grammatical relationships (stores an index for each word based on its grammatical roles which is a structure of data and stores the words with words and some terms are stored with the terms that describe them, paragraphs 41 and 42).

5. As per claims 13 and 38, Govrin teaches the determining the grammatical role for each meaningful term and the determining of the additional grammatical role for at least one of the meaningful terms yields a plurality of grammatical relationships between meaningful terms that are identical (determines both prepositions and role of nouns according to prepositions hence determining the relationship of a noun in a prepositional phrase twice, paragraphs 64-67).

6. As per claims 14 and 39, Govrin teaches the determining of a grammatical role for each meaningful term includes determining whether the term is a verb, verb modifier and noun modifier (paragraph 38).

7. As per claims 15, 16, 40 and 41, Govrin teaches the enhance data representation data structure is used to index a corpus of heterogeneous documents (indexes new texts which would be inherently different from the stored texts, paragraph 34).

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8. As per claims 17 and 42, Govrin teaches the enhanced data structure is used to execute a query against objects in a corpus of documents (matches the search query to an index of a document in the database, paragraph 94).
9. As per claims 18 and 43, Govrin teaches the enhanced data representation data structure corresponds to the query and results are returned that satisfy the query when an object in the corpus contains similar terms associated with similar grammatical roles to the terms and their associated roles as stored in the enhanced data representation that correspond to the query (matches indices hence matching the categories and words, paragraph 98).
10. As per claims 19 and 44, Govrin teaches the objects in the corpus are sentences and indications of sentences that satisfy the query are returned (returns the answer index and the answer sentence, paragraphs 122-124).
11. As per claims 20, 21, 45 and 46, Govrin teaches returning indications of documents that contain similar terms to those found in at least one sentence and document that was indicated in the results returned that satisfied the query (returns the name of the document with the answer sentence that would be within the document, paragraph 124).
12. As per claims 22 and 47, Govrin teaches the enhanced data structure corresponds to the query and terms that are associated with designated grammatical roles are returned for each object in the corpus that contains similar terms associated with similar grammatical roles to the terms and associated roles of designated relationships from the enhanced data representation data structure that corresponds to

the query (returns the terms relevant to the query in the answer and these words would have matched roles, paragraphs 120-124).

13. As per claims 23, 24 and 48, Govrin teaches adding additional relationships to the enhanced data representation data structure to be used to execute the query against objects in a corpus of documents (includes more than one index alternative which could include any relationships, paragraph 71).

14. As per claims 50, 68 and 69, Govrin teaches a method in a computer system, computer-readable medium and a syntactic query engine for transforming a document of a data set into a canonical representation, the document having a plurality of sentences, each sentence having a plurality of terms, comprising:

for each sentence, parsing the sentence to generate a parse structure having a plurality of syntactic elements (ICA process analyzes sentence and parses them, paragraphs 37 and 56);

determining a set of meaningful terms of the sentence from these syntactic elements (noise words are ignored hence only analyzing the meaningful terms, paragraph 62);

determining from the structure of the parse structure and the syntactic elements a grammatical role for each meaningful term, wherein at least one of the grammatical roles for a meaningful term is a noun modifier of a noun phrase (determines adjectives and nouns wherein they are stored together to exhibit the phrase, paragraph 42); and

storing in an enhanced data representation data structure a representation of each meaningful term associated with its determined grammatical role, in a manner that

indicates a grammatical relationship between a plurality of the meaningful units (stores relationship between the adjective and noun, paragraph 42).

15. As per claims 51 and 70, Govrin teaches storing the full grammar of the sentence (each word is assigned an index indicating the grammar roles, paragraph 38).

16. As per claims 52-54 and 71-73, Govrin teaches determining both the parts of speech of each word and the subject, object, prepositional phrases etc. within the sentences, which would include assigning multiple roles to one word, therefore any combination of part of speech and syntactic rules are possible (paragraphs 38, 40, 41, 42, 63 and 64).

17. As per claim 56, Govrin teaches a plurality of grammatical relationships between meaningful terms that are identical are stored in the enhanced data representation data structure (determines both prepositions and role of nouns according to prepositions hence determining the relationship of a noun in a prepositional phrase twice, paragraphs 64-67).

18. As per claims 57, 58, 74 and 75, Govrin teaches the enhance data representation data structure is used to index a corpus of heterogeneous documents (indexes new texts which would be inherently different from the stored texts, paragraph 34).

19. As per claims 59 and 76, Govrin teaches the enhanced data structure is used to execute a query against objects in a corpus of documents (matches the search query to an index of a document in the database, paragraph 94).
20. As per claim 60, Govrin teaches the enhanced data representation data structure corresponds to the query and results are returned that satisfy the query when an object in the corpus contains similar terms associated with similar grammatical roles to the terms and their associated roles as stored in the enhanced data representation that correspond to the query (matches indices hence matching the categories and words, paragraph 98).
21. As per claims 61 and 77, Govrin teaches the objects in the corpus are sentences and indications of sentences that satisfy the query are returned (returns the answer index and the answer sentence, paragraphs 122-124).
22. As per claims 62, 63, 78 and 79, Govrin teaches returning indications of documents that contain similar terms to those found in at least one sentence and document that was indicated in the results returned that satisfied the query (returns the name of the document with the answer sentence that would be within the document, paragraph 124).
23. As per claim 64, Govrin teaches the enhanced data structure corresponds to the query and terms that are associated with designated grammatical roles are returned for each object in the corpus that contains similar terms associated with similar grammatical roles to the terms and associated roles of designated relationships from the enhanced data representation data structure that corresponds to the query (returns

the terms relevant to the query in the answer and these words would have matched roles, paragraphs 120-124).

24. As per claims 65, 66 and 80, Govrin teaches adding additional relationships to the enhanced data representation data structure to be used to execute the query against objects in a corpus of documents (includes more than one index alternative which could include any relationships, paragraph 71).

25 . As per claims 89, 93 and 94, Govrin teaches a method, computer-readable memory and a query engine in a computer system for transforming an object of a data set into a canonical representation for use in indexing the objects of the data set and in querying the data set, the object being other than a text-only document and having a plurality of units that are specified according to an object-specific grammar, comprising:

for each object, decomposing the object to generate a parse structure having a plurality of syntactic elements (ICA process analyzes sentence and parses them, paragraphs 37 and 56);

determining a set of meaningful units of the object from these syntactic elements (noise words are ignored hence only analyzing the meaningful terms, paragraph 62);

determining from the structure of the parse structure and the syntactic elements a grammatical role for each meaningful unit (determines the part of speech of each word, paragraph 38); and

storing in an enhanced data representation data structure a representation of each meaningful unit associated with its determined grammatical role, in a manner that indicates a grammatical relationship between a plurality of the meaningful units (stores

each word with its indexes (stores an index for each word based on its grammatical roles which is a structure of data and stores the words with words and some terms are stored with the terms that describe them, paragraphs 41 and 42).

26. Claims 81-83 and 85-88 are rejected under 35 U.S.C. 102(b) as being anticipated by Ho (U.S. Pat. 5,884,302).

27. As per claims 81, 85 and 86, Ho teaches a method, computer readable medium in a computer system for storing a normalized data structure representing a document of a data set, the document having a plurality of sentences, each sentence having a plurality of terms, comprising:

for each sentence, determining a set of meaningful terms of the sentence and at least one grammatical role for each meaningful term (parses the question to extract each word hence each word would be meaningful and maps each word to the grammatical table to identify the grammatical meaning, col. 8, lines 24-33); and

storing sets of grammatical relationships between a plurality of meaningful terms based upon the determined grammatical role of each meaningful term relative to a meaningful term that is being used as a governing verb, wherein, for each meaningful term that is being used as a governing verb, the normalized data structure contains a set of meaningful terms that are subjects relative to the governing verb, a set of meaningful terms that are objects relative to the governing verb, and at least one of a set of meaningful terms that are verb modifiers of prepositional phrases that contain the governing verb and a set of meaningful terms that are noun modifiers of noun phrases

that relate to the governing verb (builds a table for a verb that contains the subject and object and also stores the adjective along with an indication of the noun which would either be a subject or object related to the verb, col. 14, lines 36-53 and col. 16, lines 1-29).

28. As per claims 82, 83, 87 and 88, Ho teaches storing meaningful terms that correspond to a country name, person, corporate name and organization (proper noun, col. 12, lines 17-35).

Claim Rejections - 35 USC § 103

29. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

30. Claims 3-11, 12, 25, 28-36, 37, 49, 55 and 90-92 rejected under 35 U.S.C. 103(a) as being unpatentable over Govrin.

As per claims 3, 12, 28, 37, 55 and 67 Govrin does not specifically teach using a heuristic to determine the additional role for the at least one meaningful role and which relationships to store in the data structure.

However, the Examiner takes Official Notice that heuristics are notoriously well known in the art. Therefore, it would have been obvious to one of ordinary skill in the

art at the time of invention to modify the system of Govrin to use heuristics because the low cost estimation function would find the optimal search solution to the problem.

31. As per claims 4-10 and 29-35, Govrin teaches determining both the parts of speech of each word and the subject, object, prepositional phrases etc. within the sentences which would include assigning multiple roles to one word, therefore any combination of part of speech and syntactic rules are possible (paragraphs 38, 40, 41, 42, 63 and 64).

32. As per claims 11 and 36, Govrin does not teach the determined additional grammatical role is a part of grammar that is not implied by the position of the at least one meaningful term relative to the structure of the sentence.

However, the Examiner takes Official Notice that the subject, object, predicate, etc. can occur anywhere in the sentence. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to determine the additional grammatical role without the positional information of the meaningful term in the sentence because it would overcome the deficiencies of positional based syntactic analyzers that have difficulty determining roles of words that do not follow the basic sentence structure.

33. As per claims 25, 49 and 67, Govrin does not specifically teach returning weighted results.

However, the Examiner takes Official Notice that weighting query results is notoriously well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Govrin to weight the query results because it would help ensure the correct results are obtained.

34. As per claims 90-92, Govrin does not specifically teach the objects to be audio, video or image data.

However, the Examiner takes Official Notice that indexing multimedia data is notoriously well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Govrin to index audio, video and image data because it would make the system more versatile.

35. As per claims 95-97, 101-103, 107-109 and 113-115, Ho does not teach the returned indications are indications of paragraphs or documents.

However, the Examiner takes Official Notice that returning search results within the paragraph or document to which they belong is notoriously well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Ho to return indications of paragraphs and documents because it would allow the user to see the context of the search results.

36. As per claims 98-100, 104-106, 110-112 and 116-118, Ho does not teach the returned indications are found through latent semantic regression techniques.

However, the Examiner takes Official Notice that Latent Semantic Analysis is notoriously well known in the art. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Ho to use Latent Semantic Analysis because it will locate synonymous words hence improving searching.

37. Claim 84 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ho.

Ho teaches a data processing system comprising a computer processor and a memory, the memory containing structured data that stores a normalized representation of sentence data, the structured data being manipulated by the computer processor under the control of program code and stored in the memory as:

a subject and object table having a set of meaningful term pairs, each pair having a meaningful term that is associated with a grammatical role of a verb and a meaningful term that is associated with a grammatical role of a subject and object relative to the verb (col. 14, lines 40-50);

a representation of associations between the subject and the object, the representation indicating, for each meaningful term associated with the grammatical role of the verb, the meaningful terms that are associated with the grammatical role of subject relative to the verb and the meaningful terms that are associated with the grammatical role of object relative to the verb (table inherently shows the associations between the subject and object, col. 14, lines 40-50);

a preposition table (determines prepositions hence must have a table or list to recognize them, col. 17, lines 36-51); and

a noun modifier table having a set of meaningful term pairs, each pair having a meaningful term that is associated with a grammatical role of a noun and a meaningful term that is associated with a grammatical role of an noun modifier relative to the noun (table shows the relation between the adjective and the noun, col. 16, lines 15-25).

Ho does not teach the preposition table associated with a grammatical role of a verb, a meaningful term that is associated with a grammatical role of preposition relative

to the verb and a meaningful term that is associated with a grammatical role of a verb modifier relative to the verb.

However, the Examiner takes Official Notice that storing prepositions with their relations is well known in the art. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to have the preposition table associated with a grammatical role of a verb, a meaningful term that is associated with a grammatical role of preposition relative to the verb and a meaningful term that is associated with a grammatical role of a verb modifier relative to the verb because this would allow quicker reference of the verb and verb modifier associated with the preposition.

Conclusion

38. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Haigh et al. (U.S. Pat. Pub. 2003/0004716A1) teaches a system for natural language indexing of documents that parses the documents into parts of speech and syntactic groups.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Sked whose telephone number is (571) 272-7627. The examiner can normally be reached on Mon-Fri (8:00 am - 4:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571-272-7582. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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07/14/05

Susan McFadden
SUSAN MCFADDEN
PRIMARY EXAMINER